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"The normal inherent variability, in size, of the whole bird and its members, is at least twelve per cent. of the mean. (This is independent of all extraneous circumstances.)"

"Size varies in direct ratio with the latitude of the breeding season."

"Size of peripheral parts, as compared with total size, varies in inverse ratio with the latitude of the breeding-place. (*Cf.* Allen, Bull. Mus. Comp. Zool. II, p. 229)."

Intensity of coloration varies in direct ratio with the temperature and humidity of the breeding-place. Moisture, however, intensifies color more than heat; aridity tones down color more than cold. Birds from hot dry places, therefore, are paler, *cæteris paribus*, than birds from wet places of the same or even lower temperature. (*Cf.* Allen, *op. cit.*, p. 239)."

"Variation, unconnected with age, sex or season, is in inverse ratio with the migration or changeable geographical distribution of individuals."

Other propositions are announced relating to variations dependent upon age and sex in the group especially under consideration. They all appear to have been strictly followed, and the conclusions thus reached seem to be in the main thoroughly tenable. The propositions relating to geographical variation, though as yet far from being generally accepted, we are convinced are well founded, as the more thoroughly they are tested the more fully are they confirmed.— J. A. A.

MONOGRAPH OF THE SPHENISCIDÆ.*—In this important memoir of forty-two pages we have one of the most valuable contributions to the literature of the *Spheniscidæ* that has yet appeared. It opens with a critical historical synopsis of all preceding papers treating of the group, from Linnæus down to the present year, in which are briefly yet lucidly traced the principal changes of synonymy and the gradual accumulation of our present knowledge of the family. From the two species known in 1766 to Linnæus, the number had increased in 1781 to eight valid species, four of which were then made known for the first time by Forster in his valuable history of the group. The next valid new species was described by Brandt in 1837, "the first for half a century." Later the number of valid species was increased to twelve, the number recognized by Schlegel in 1867, and by our present author. Respecting Schlegel's judicious revision of the group Dr. Coues observes; "As far as the determination of the species is concerned, our own studies bear out Dr. Schlegel's in every single instance; indeed, it seems to us impossible to reach any other conclusion, when any considerable and sufficient amount of material is examined. The present article of ours is so completely an endorsement of Dr. Schlegel's, that the only points of difference are one or two unimportant synonymical determinations among the crested species which, after all, will probably remain matters of opinion."

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* Material for a Monograph of the *Spheniscidæ*. By Dr. Elliott Coues, U. S. A. Proc. Acad. Nat. Sci. Phil., 1872, pp. 170-212, with 8 woodcuts. (Sept., 1872.)

The materials on which Dr. Coues' memoir is based are the collections of the Philadelphia Academy of Natural Sciences, (now for the first time elaborated), and of the Smithsonian Institution. Both are rich in representatives of this group, with which have been also collated the specimens in the Museum of the Boston Society of Natural History. Part II is devoted to a discussion of "certain points of cranial structure bearing upon the determination of the genera." Alluding to the diversity of opinions among authors in respect to the number of genera — some placing all in one genus and others making a genus of each species — Dr. Coues states that "to fix the question of genera with reasonable certitude" was one of the objects of his present investigation. An examination of the skulls at his command (but representing only a part of the species) showed "*three* positively different patterns." Each pattern, while marked by peculiarities of its own, possesses characters shared also by one of the others, and it is on the combination of these features that the genera are established. Whilst our author thinks it "probable that no more than three genera will be finally determinable, namely, Aptenodytes, Eudyptes and Spheniscus," he provisionally admits a fourth, Pygocelis. "These genera are exactly those of Prof. Hyatt," and "correspond very nearly with the sections Dr. Schlegel has indicated." In this connection the chief osteological peculiarities of *Aptenodytes* "*Pennantii*" are described, with more especial reference, however, to the membral segments. "The tarso-metatarsus," Dr. C. remarks, is the most remarkable bone of the skeleton in several respects, and the one more particularly diagnostic of the family; penguins afford probably the only instance, among recent birds, of width crosswise being decidedly greater than thickness antero-posteriorly, and more than half the length; and the only case of persistence throughout life of fenestræ marking the composition of the bones of three originally distinct metatarsals." These membral and cranial features are illustrated by several figures drawn by Prof. Morse.

Part III treats briefly of the geographical distribution of the species. The penguins are not only confined to the southern hemisphere, but range northward only to latitudes 10° south on the Pacific coast of South America and to 8° south on the Atlantic coast of the same continent; on the African coast only to 25° south and occur only much further to the southward on the coast of Australia. The Falkland Islands appear to be the geographical centre of the family, where no less than half the species occur. They range southward, however, as far towards the pole as voyagers have yet penetrated. The species have usually a wide range, several of them being circumpolar; of none does the exact range of periodical movements or migrations appear to be known. In general they assemble in immense numbers at their breeding stations where they commonly remain for but a short portion of the year.

Part IV gives a list of the species, with their synonymy, and Latin diagnoses. The specimens examined are enumerated, and generally each is described more or less in detail, with special reference to an elucidation of the various stages of plumage each species presents. As we have already indicated, only twelve species are recognized, as follows:—*Aptenodytes Patagonica*, *A. longirostris*, *Pygocelis tæniata*, *P. adeliæ*, *P. antarctica*, *P. antipodes*, *Eudyptes catarractes*, *E. chrysocome*, *E. chrysolopha*, *E. diademata*, *Spheniscus minor*, *S. demersus*, *S. demersus* var. *Magellanicus*.

This elaborate memoir constitutes a valuable supplement to Prof. Hyatt's recent catalogues of the *Spheniscidæ*,* and must form for many years a standard work of reference for the group. Besides elucidating the complicated generic and specific synonymy of the family, it is a valuable contribution to our knowledge of the osteology of the penguins, and to their geographical distribution and changes of plumage during the period of adolescence.—J. A. A.

Dubois' Conspectus.†—Lists of European birds seem destined to occur at frequent irregular intervals, and perhaps we cannot have too many of them, at any rate so long as they continue to agitate the subject by their notable mutual disagreements, and thus serve

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* See Amer. Nat. Vol. VI, pp. 472, 515.

† Conspectus systematicus et geographicus Avium Europæarum; auctore Alph. Dubois, etc., etc., Bruxelles, 1870. (8vo. pp. 35.)